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Dr. Edward L. Ginzton
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Dear Ed:

A couple of years ago you indicated you would be interested in any comment I might want to make on the lines of development that would be of most general use in instrumentation for biological research. What made me think of that again I don't know, but I am enclosing something I wrote up on the subject some while ago. My answer now is really a parry: the general purpose digital computer.

We are still a long way from having the kinds of machines we could use for real time laboratory applications; we have a LINC in the department that just begins to fill the bill. But the machines should come down about 5-10 fold in price before we can use them as freely as they should be used. So mass production technique and economy is obligatory - a prospect that will doubtless discourage many risk-capital entrepreneurs from pushing hard now. Besides the computers, modular components that lend themselves to interfaces at computer input-output will probably dominate tomorrow's instruments.

In the same earlier correspondence, I also betrayed some enthusiasm for photochromism. I hadn't realized then how much work was already going on in this field by groups at NCR, IBM and Corning. Even so, this is still an enormous field and opportunity, perhaps especially because there is not yet a dense tradition binding electrical engineers with organic chemists. What I have in mind for the long run is obviously the "molecular computer". Meanwhile, photochemical switching should already allow such devices as a light-amplifier (light in; light out: input beam modulating the attenuation of a photochemical filter); in the spatial domain this would give projection TV, maybe image intensification for more creative purposes too.

Sincerely yours,

Joshua Lederberg
Professor of Genetics

GINZTON